FIG.1

FIG.1B | FIG.1A

FIG.1A

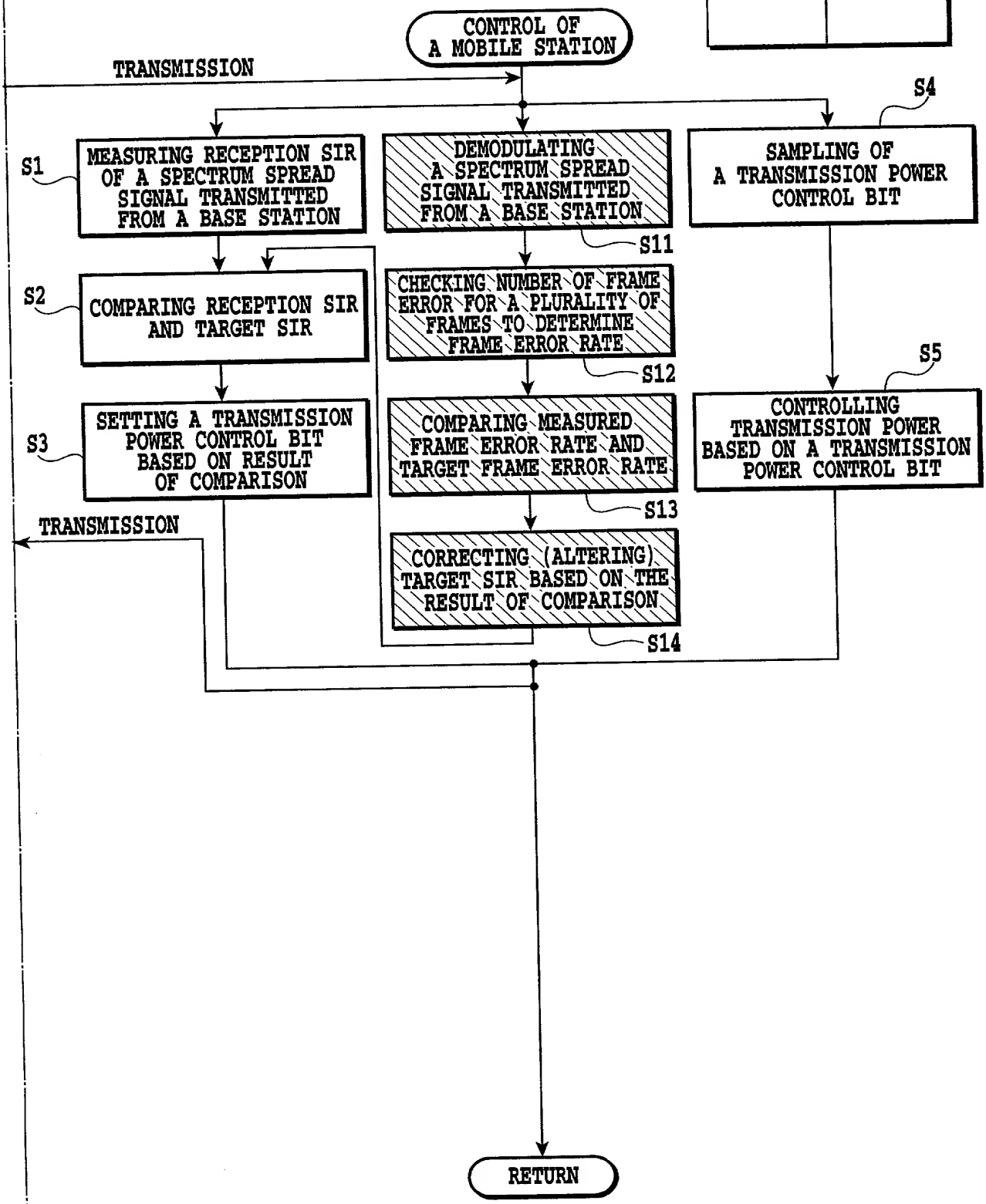
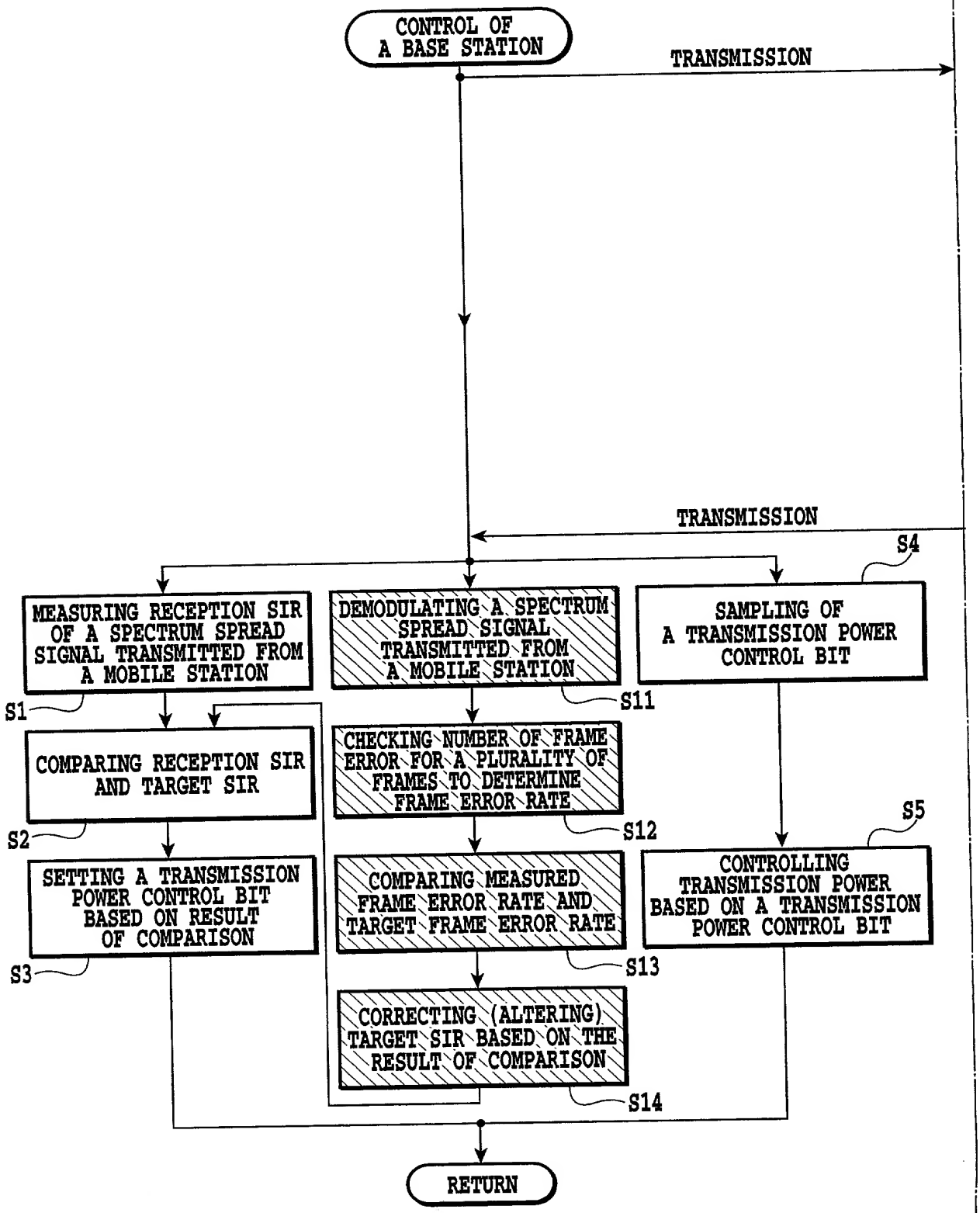


FIG.1B


CONTROL OF A BASE STATION
TRANSMISSION
TRANSMISSION
MEASURING RECEPTION SIR OF A SPECTRUM SPREAD SIGNAL TRANSMITTED FROM A MOBILE STATION
S1
COMPARING RECEPTION SIR AND TARGET SIR
S2
SETTING A TRANSMISSION POWER CONTROL BIT BASED ON RESULT OF COMPARISON
S3
DEMODULATING A SPECTRUM SPREAD SIGNAL TRANSMITTED FROM A MOBILE STATION
S11
CHECKING NUMBER OF FRAME ERROR FOR A PLURALITY OF FRAMES TO DETERMINE FRAME ERROR RATE
S12
COMPARING MEASURED FRAME ERROR RATE AND TARGET FRAME ERROR RATE
S13
CORRECTING (ALTERING) TARGET SIR BASED ON THE RESULT OF COMPARISON
S14
S4
SAMPLING OF A TRANSMISSION POWER CONTROL BIT
S5
CONTROLLING TRANSMISSION POWER BASED ON A TRANSMISSION POWER CONTROL BIT
RETURN

MEASURED NUMBER OF FRAME = N_{frame}
MEASURED NUMBER OF FRAME ERROR = N_{frame}
→ MEASURED FRAME ERROR RATE = N_{error}/N_{frame}

FIG.2A

MEASURED FRAME ERROR RATE = N_{error}/N_{frame}

(1) $N_{error} \geqq T_{error}$ → TARGET SIR IS INCREASED BY Δ_{UP}(dB)
(2) $N_{error} < T_{error}$ → TARGET SIR IS DECREASED BY Δ_{down}(dB)

FIG.2B

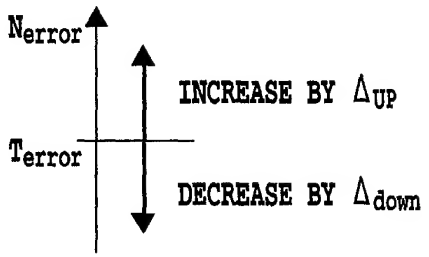


FIG.2C

UPPER LIMIT TARGET FRAME ERROR RATE = $T_{error,u}/N_{frame}$
LOWER LIMIT TARGET FRAME ERROR RATE = $T_{error,d}/N_{frame}$
($T_{error,d} \leqq T_{error,u}$)

(1) $T_{error} > T_{error,u} \rightarrow$ TARGET SIR IS INCREASED BY Δ_{up} (dB)
(2) $T_{error,d} \leqq N_{error} \leqq T_{error,u} \rightarrow$ TARGET SIR IS NOT ALTERED
(3) $N_{error} < T_{error,d} \rightarrow$ TARGET SIR IS DECREASED BY Δ_{down} (dB)

FIG.3A

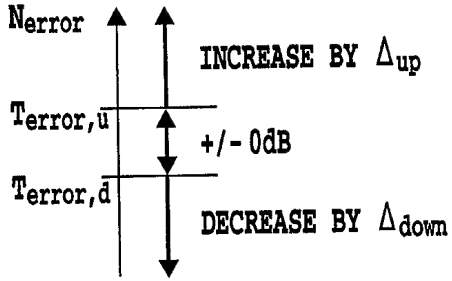


FIG.3B

UPPER LIMIT TARGET FRAME ERROR RATE = $T_{error,u(1)}/N_{frame}$
LOWER LIMIT TARGET FRAME ERROR RATE = $T_{error,d(1)}/N_{frame}$
($T_{error,d(1)} \leqq T_{error,u(1)}$)

SETTING THRESHOLD VALUES $T_{error,u(n)}$ ($2 \leqq n \leqq N$), $T_{error,d(m)}$ ($2 \leqq m \leqq M$)
($T_{error,d(M)} \leqq T_{error,d(M-1)} \leqq \cdots \leqq T_{error,d(1)} \leqq T_{error,u(1)} \leqq T_{error,u(2)} \leqq \cdots \leqq T_{error,u(N)}$)

(1) $N_{error} > T_{error,u(N)}$ → TARGET SIR IS INCREASED BY $\Delta_{up(N)}$ (dB)
(2) $T_{error,u(n+1)} \leqq N_{error} > T_{error,u(n)}$ → TARGET SIR IS INCREASED BY $\Delta_{up(n)}$ (dB) (n = 1~N-1)
(3) $T_{error,d(1)} \leqq N_{error} \leqq T_{error,u(1)}$ → TARGET SIR IS NOT ALTERED
(4) $T_{error,d(m+1)} \leqq N_{error} < T_{error,d(m)}$ → TARGET SIR IS DECREASED BY $\Delta_{down(m)}$ (dB) (m = 1~M-1)
(5) $N_{error} < T_{error,d(M)}$ → TARGET SIR IS DECREASED BY $\Delta_{down(M)}$ (dB)

FIG.4A

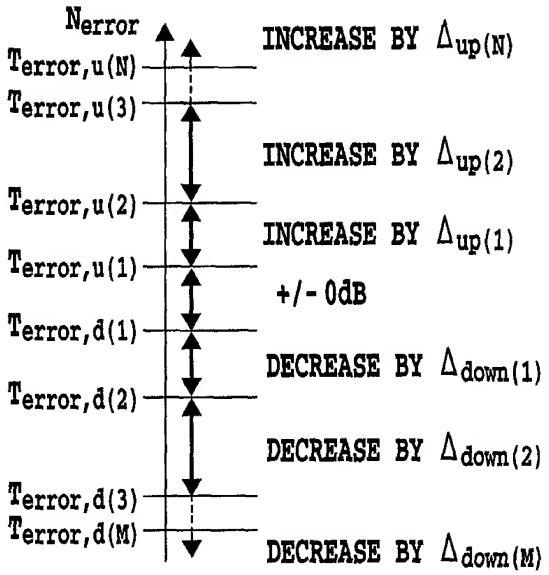


FIG.4B

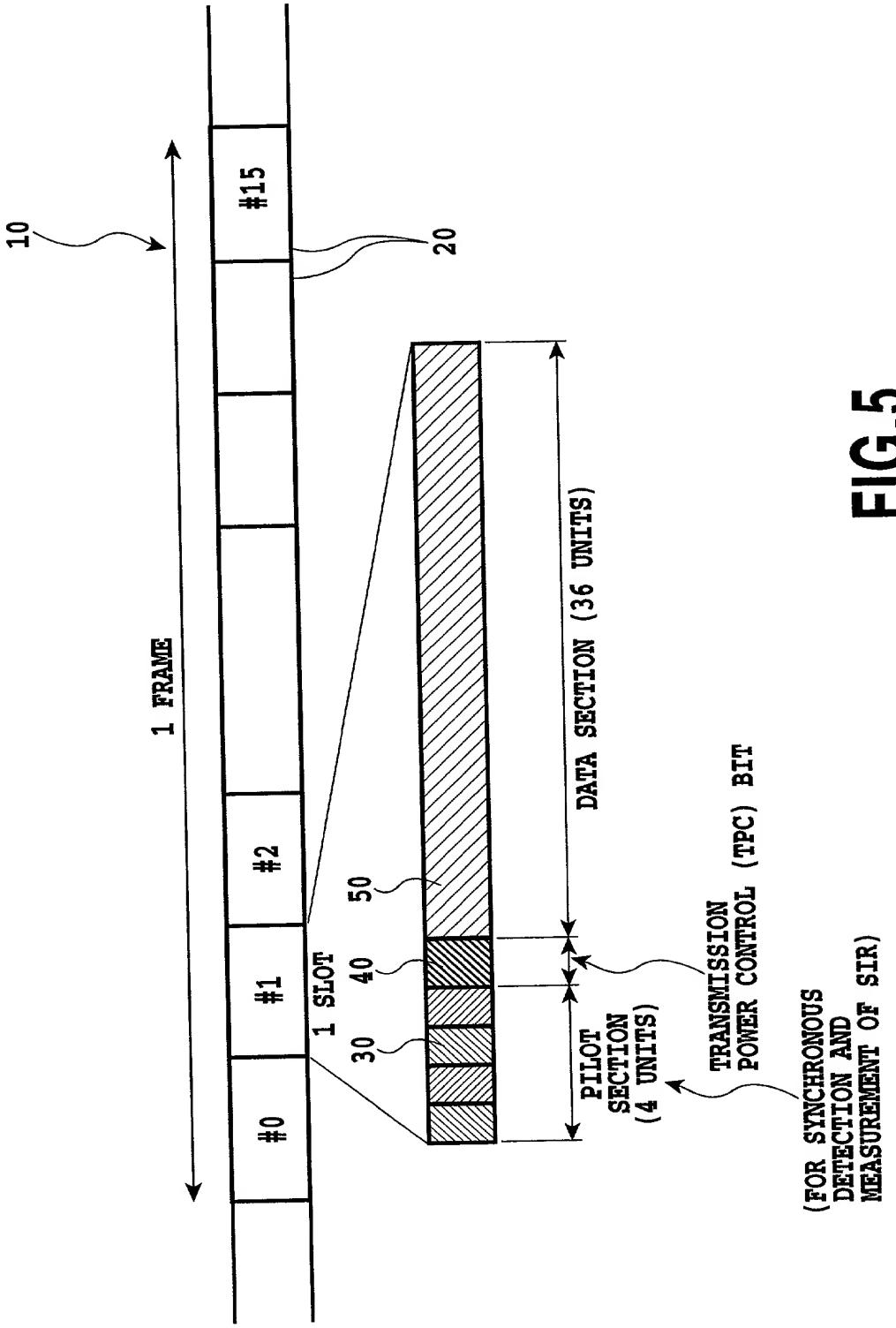

10
20
#15
#2
#1
#0
1 FRAME
1 SLOT
50
40
30
DATA SECTION (36 UNITS)
PILOT SECTION (4 UNITS)
TRANSMISSION POWER CONTROL (TPC) BIT
(FOR SYNCHRONOUS DETECTION AND MEASUREMENT OF SIR)

FIG.5

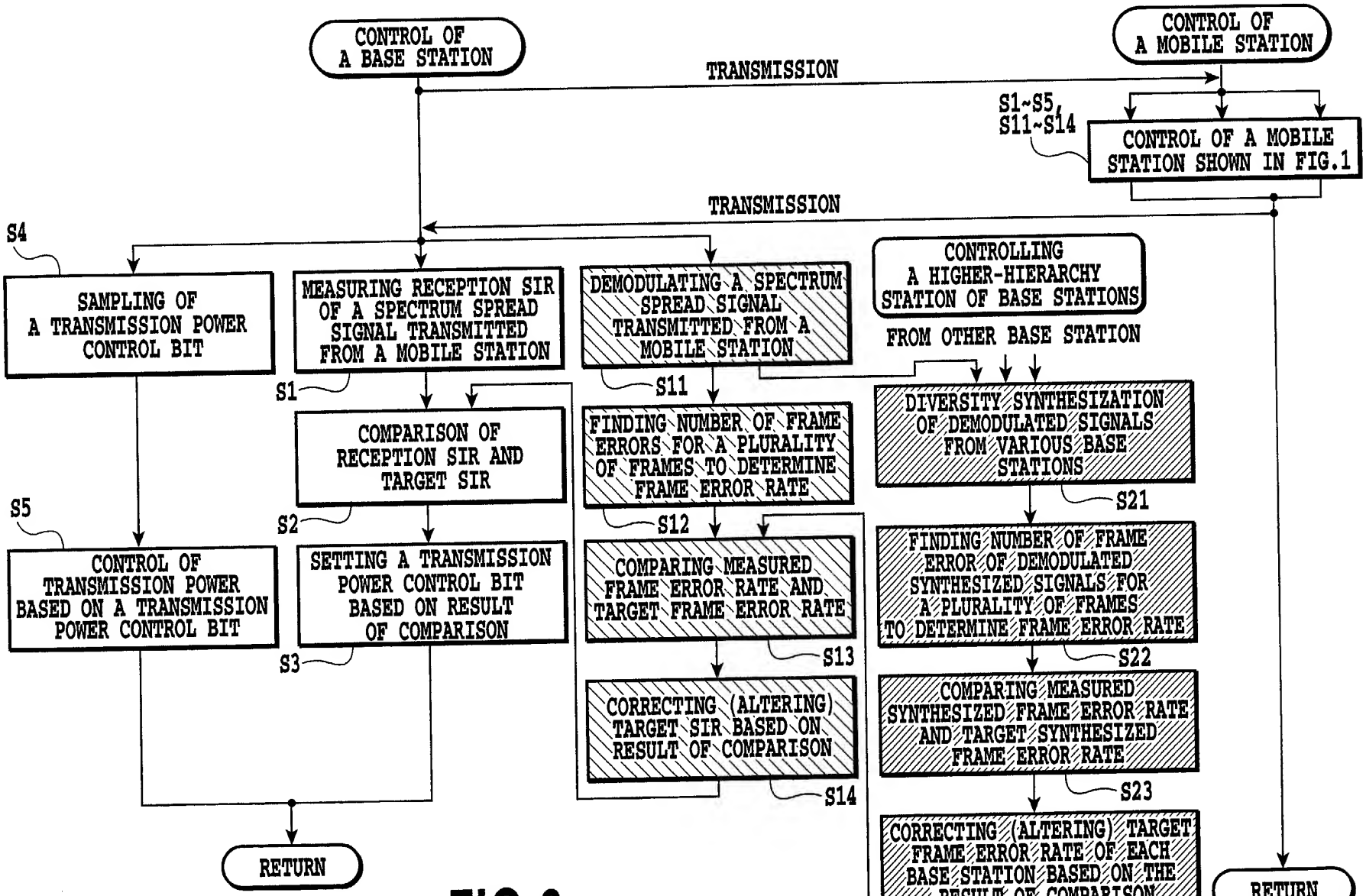

CONTROL OF A BASE STATION
TRANSMISSION
CONTROL OF A MOBILE STATION
S1~S5, S11~S14
CONTROL OF A MOBILE STATION SHOWN IN FIG.1
TRANSMISSION
S4
SAMPLING OF A TRANSMISSION POWER CONTROL BIT
MEASURING RECEPTION SIR OF A SPECTRUM SPREAD SIGNAL TRANSMITTED FROM A MOBILE STATION
S1
COMPARISON OF RECEPTION SIR AND TARGET SIR
S2
SETTING A TRANSMISSION POWER CONTROL BIT BASED ON RESULT OF COMPARISON
S3
DEMODULATING A SPECTRUM SPREAD SIGNAL TRANSMITTED FROM A MOBILE STATION
S11
FINDING NUMBER OF FRAME ERRORS FOR A PLURALITY OF FRAMES TO DETERMINE FRAME ERROR RATE
S12
COMPARING MEASURED FRAME ERROR RATE AND TARGET FRAME ERROR RATE
S13
CORRECTING (ALTERING) TARGET SIR BASED ON RESULT OF COMPARISON
S14
CONTROLLING A HIGHER-HIERARCHY STATION OF BASE STATIONS
FROM OTHER BASE STATION
DIVERSITY SYNTHESIZATION OF DEMODULATED SIGNALS FROM VARIOUS BASE STATIONS
S21
FINDING NUMBER OF FRAME ERROR OF DEMODULATED SYNTHESIZED SIGNALS FOR A PLURALITY OF FRAMES TO DETERMINE FRAME ERROR RATE
S22
COMPARING MEASURED SYNTHESIZED FRAME ERROR RATE AND TARGET SYNTHESIZED FRAME ERROR RATE
S23
CORRECTING (ALTERING) TARGET FRAME ERROR RATE OF EACH BASE STATION BASED ON THE RESULT OF COMPARISON
S24
S5
CONTROL OF TRANSMISSION POWER BASED ON A TRANSMISSION POWER CONTROL BIT
RETURN
RETURN

FIG.6

MEASURED NUMBER OF FRAME AFTER SITE VERSITY SYNTHESIZATION = N_{frame}
MEASURED NUMBER OF FRAME ERROR AFTER SITE DIVERSITY SYNTHESIZATION = N_{error}
→ MEASURED SYNTHESIZED FRAME ERROR RATE = N_{error}/N_{frame}

FIG.7A

TARGET SYNTHESIZED FRAME ERROR RATE = T_{error}/N_{frame}

(1) $N_{error} \geqq T_{error}$, → T_{BS} IS INCREASED BY Δ_{UP}
(2) $N_{error} < T_{error}$, → T_{BS} IS DECREASED BY Δ_{down}

FIG.7B

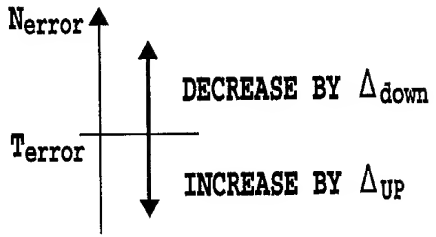


FIG.7C

UPPER LIMIT TARGET SYNTHESIZED FRAME ERROR RATE
$= T_{error,u}/N_{frame}$

LOWER LIMIT TARGET SYNTHESIZED FRAME ERROR RATE
$= T_{error,d}/N_{frame}$

$(T_{error,d} \leqq T_{error,u})$

(1) $T_{error} > T_{error,u} \rightarrow T_{BS}$ IS INCREASED BY Δ_{UP}

(2) $T_{error,d} \leqq N_{error} \leqq T_{error,u} \rightarrow T_{BS}$ IS NOT ALTERED

(3) $N_{error} < T_{error,d} \rightarrow T_{BS}$ IS DECREASED BY Δ_{DOWN}

FIG.8A

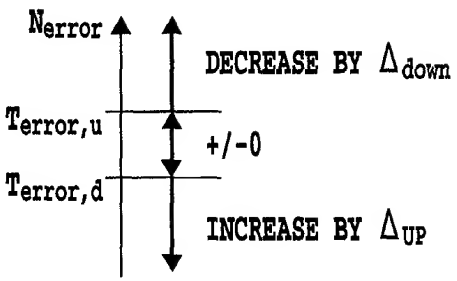


FIG.8B

UPPER LIMIT TARGET SYNTHESIZED FRAME ERROR RATE = $T_{error,u(1)}/N_{frame}$
LOWER LIMIT TARGET SYNTHESIZED FRAME ERROR RATE = $T_{error,d(1)}/N_{frame}$
($T_{error,d(1)} \leqq T_{error,u(1)}$)

THRESHOLD VALUES $T_{error,u(n)}$ ($2 \leqq n \leqq N$), $T_{error,d(m)}$ ($2 \leqq m \leqq M$)
($T_{error,d(M)} \leqq T_{error,d(M-1)} \leqq \cdots \leqq T_{error,d(1)} \leqq T_{error,u(1)} \leqq T_{error,u(2)} \leqq \cdots \leqq T_{error,u(N)}$) ARE SET

(1) $N_{error} > T_{error,u(N)} \rightarrow T_{BS}$ IS INCREASED BY $\Delta_{up(N)}$
(2) $T_{error,u(n+1)} \leqq N_{error} > T_{error,u(n)} \rightarrow T_{BS}$ IS INCREASED BY $\Delta_{up(n)}$ ($n = 1 \sim N-1$)
(3) $T_{error,d(1)} \leqq N_{error} \leqq T_{error,u(1)} \rightarrow T_{BS}$ IS NOT ALTERED
(4) $T_{error,d(m+1)} \leqq N_{error} < T_{error,d(m)} \rightarrow T_{BS}$ IS DECREASED BY $\Delta_{down(m)}$ ($m = 1 \sim M-1$)
(5) $N_{error} < T_{error,d(M)}, \rightarrow T_{BS}$ IS DECREASED BY $\Delta_{down(M)}$

FIG.9A

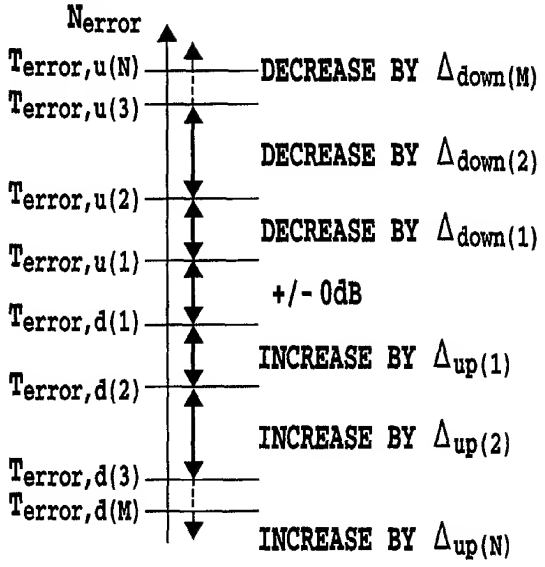


FIG.9B